To: Dr. Earthea Nance (EPA Region 6 Administrator) Date: March 19, 2022

Cc. Mr. Charles Maguire (EPA Region 6 Water Director) Subject: Sludge **Disposition** from Desalination Projects

From: Encarnacion Serna (Chon)

Dear Dr. Nance I took the time yesterday and today to inform you of something you might already know, and if you do, ***please excuse the writing of this letter.*** There are at the present time five (5) officially announced gigantic desalination projects all to be located on the shores of the Corpus Christi Bay/Estuary System. Of these five projects, four (4) are already in the permitting process. And as you may already know Texas Law requires for each project; that both a water-rights permit for the water intake (WRPERM's) and a water- quality permit for the discharge waste (WQ's.) be obtained prior to start-up of construction. As it is being proposed now stated on the submitted applications to the TCEQ, all the intakes for all of these four desalination projects will be coming from various segments of the Corpus Christi Bay. And all the generated high salinity discharges will be returned to various segments of the same Corpus Christi Bay; with only several thousand feet separating intakes from discharges (honestly a very stupid idea.) As far as I know the application for the water-rights permit for the Harbor Island Desalination Project, has not been submitted yet, so I do not know at this time exactly where the intake will be located for this proposed project. This review processes present at least two gigantic gaps/failures in the TCEQ review process approach, because each application is being reviewed separately, independently and individually by different team groups and by two different departments.

I have read, studied, and done my own assessment on all of these applications that have been submitted to the TCEQ**, and I have found them to be Sham and Shoddy**. **The science in them, is fake to non-existent, and the upfront engineering is sub-standard, deficient, and way below accepted Industry Practices. *I strongly recommend at this time that you form a robust team of experts to review and study these applications and asses the nature of these gigantic monster projects that are being proposed and to "weigh in" as a Federal Agency to protect against and impending environmental disaster if these desalination plants get built.***

As you may already know, in addition to the highly polluting high salinity discharge wastes, the desalination projects will also generate in the pre-treatment processes, highly polluting discharges referred to as sludges, which would need to be disposed of somehow. The WQ applications indicate that these sludge volumetric flows will go to landfills, but nowhere in the applications are these flows characterized; **a sub-standard engineering practice that leaves a huge gap in the application review process.** The applications however do indicate the magnitude of these sludge in units of million gallons per day i.e., MGD, but there is no indication on these applications how these landfills will be designed, nor how big will they be, nor where they will be located. **Here again another big gap in the review process**. Also **undisclosed types and amounts of chemicals** (chlorine bearing/releasing compounds, flocculants, coagulants, and most likely acids for pH control) will be used in the pre-treatment processes where the sludge flows would be generated, but without these flows being disclosed nor characterized and made public by the application process; it is impossible to determine what chemicals and in what

amounts will these chemicals be present in these sludges. **Here again another big gap in the application review process. The nature and the disposition of these sludges are unfortunately not being covered in the permitting process at all.**

The problems and issues associated with these desalination projects are many and each is multi-faceted so in this letter I will only talk about one issue/problem, **The Sludge** and its disposition. And for simplicity I will only talk about the generated sludge of only two of the proposed desalination projects.

The projects, the application numbers, the intake flows and the stated sludge volumetric rates for these two projects are listed below:

1. La Quinta Channel Port of Corpus Christi Authority Desalination Project (WRPERM 13630 and WQ0005254000.) These permit applications indicate that this project would require an intake flow of 90.4 MGD and will generate 3.1 MGD of sludge.
2. La Quinta Channel City of Corpus Christi Desalination Project (WRPERM 13675 and WQ0005290000.) The permit application WRPERM 13675 indicates that this project would require an intake flow of 166.2 MGD. But permit application WQ0005290000 indicates this project will only need 110.7 MGD of intake. **This is a discrepancy that needs to be resolved. It would seem to me that the Applicant or the TCEQ should have resolved this issue by now (sub-standard engineering practices.)** Permit application WQ0005290000 indicates that this desalination project will generate 2.16 MGD of sludge, however if a desalination plant is built to process 166.2 and not 110.7 MGD of intake then the generated sludge would be more like in the range of 3.2 to 5.7 MGD.

The sizes of these two desalination plants would be gigantic and so will be the flows going into them and leaving them. The applications indicate that the generated sludges will go to landfills, and since there is no mention that these sludges will be transferred via pumps/pipelines to the landfills, we can assume that the generated sludges will be trucked to the landfills. If the applicants were to use eighteen-wheeler tank container trucks, with containers having 5,000-gallon capacities, and if I assume the density of the sludge to be 10 lbs./gal, and with the State of Texas truck weight limit on highways being 40,000 pounds; then The Port Authority would be trucking 32 trucks per hour to the landfill and the city would be trucking anywhere from 23 to 59 trucks per hour depending on which intake flow is used. This truck traffic would be a tremendous continuous activity that would be happening every hour of the day and every day of the year. I have been retired for two years from my service in industry where I worked in various capacities, but there was not then, not now, a landfill with equipment and personnel that can handle the off-loading of that many trucks in one hour. And when one thinks about this off-loading process and how long it takes to bring a truck in to the landfill site, to "spot it' at the weight scale, to weigh its contents, to sample the contents, to log the activities, and then to "spot it" again at the weight scale on the way out and weigh the truck one more time, one cannot help but to think that at best they could probably only do one truck per hour. I have addressed this issue with both Applicants and the TCEQ in more than one way and more than once, but unfortunately it has gone to deaf ears.

My fear on the disposition of these sludges is that the Applicants by now most probably already realized that it would be impossible to dispose of these sludges by truck to landfills, and that if these desalination plants get build, they would quickly apply through TCEQ amendments to dispose of these sludges to shoreline land estuaries or maybe back to the Bay itself instead of to landfills. This would

severely and significantly compound and aggravate the potential environmental disaster that these desalination projects create.

I strongly believe the EPA needs to address this issue now while the permitting processes are taking place.

Dear Dr. Nance it is my conclusion having worked in the petrochemical, chemical, and oil and gas refining industries for more than 45 years and having been exposed to desalination processes and technologies at various times during my career, that desalination with reverse osmosis and open intakes and discharges to and from semi-closed systems like the Bay of Corpus Christi are nothing but international scams that invariably and inevitably always end in financial failures and environmental catastrophes.

Respectfully;

Encarnacion Serna (Chon) 361-903-5774

Encarnacion Serna

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